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# A Culturally Nuanced Test of Gottfredson and Hirschi's "General Theory": Dimensionality and Generalizability in Japan and the United States

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## Abstract

The current research addresses two specific issues that direct attention to the relatively neglected topic of the cross-cultural applicability of Gottfredson and Hirschi's "general theory" that has been developed in and tested primarily in the United States. With theoretical and empirical guidance from the literature on dimensionality of low self-control, we first predict that the six elements identified in the theory form a multidimensional latent construct in two diverse societies—Japan and the United States. Drawing on the literature concerning cultural variability in individualism, and inconsistent with self-control theory, the authors then expect that although low self-control leads to deviance in both societies, the causal relationship is stronger among Americans than among Japanese. Analysis of identical survey data collected simultaneously from college students in Japan and the United States provides somewhat mixed support for our expectations and the findings appear largely consistent with predictions by self-control theory.

## Keywords

self-control theory, dimensionality, generalizability, United States–Japan comparison, individualism

## Introduction

One of the major shortcomings of the tests of the "general theory" of Gottfredson and Hirschi (1990) is the paucity of data with which to directly compare and examine the dimensionality of low

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self-control and the generalizability of the theory across cultures. Since its inception in 1990, the theory has been a dominant force behind research conducted in American criminology (Cohn & Farrington, 1999). Quite a few tests of the theory, based on self-report surveys, have also been conducted with data from Western countries other than the United States (e.g., Antonaccio & Tittle, 2008; Ozbay, 2008) and Asian countries including Korea (e.g., Hwang & Akers, 2003), Japan (e.g., Kono & Okamoto, 2001), and China (e.g., Wang, Qiao, Hong, & Zhang, 2002). With some notable exceptions (Vazsonyi, Pickering, Junger, & Helsing, 2001; Vazsonyi, Wittekind, Belliston, & Van Loh, 2004; Vazsonyi & Bellison, 2007), however, tests of self-control theory typically have relied on data collected in one nation. Of course, in part, this is so because the theory proposes no differences in how self-control predicts deviance across cultural and national groups. However, all these studies, without comparable data from another country, do not allow an exact assessment of the theoretical proposition, and therefore they cannot answer the question of whether the theory is really “general,” by which Gottfredson and Hirschi mean at least that it can equally explain deviance in Western and Asian countries.

The research of Vazsonyi, Wittekind, et al. (2004) comes closest to filling this need. In fact, to the best of our knowledge, theirs is the only study that has used the same measurement instrument in Western and Asian countries to examine both its dimensionality and generalizability cross-culturally. However, informed by theory, Vazsonyi et al. did not explicitly elaborate on how cultural nuances might affect the generalizability of the theory but rather focused on the measurement of self-control and the relationship between self-control and deviance, largely as a result of theory testing. Our approach, in contrast, draws from DeFleur’s (1969) dictum 30 years ago “to begin with a realistic model of the cultural processes and social structure of the society under consideration and to drive hypotheses concerning delinquency which are consistent with the basic characteristics of the society” (p. 30). Challenging the assumption that the theory developed in the United States is equally effective in explaining deviance in other countries (see Gottfredson & Hirschi, 1990, pp. 169–179), we thus develop a competing hypothesis that argues for cultural differences across societies and thus predict differences in the links between low self-control and deviance. Specifically, we hypothesize that two diverse cultures—Japan and the United States—vary on the extent to which individualism permeates societies and individual behaviors, and we believe that this has consequences for theory and observed relationships.

Our data are identical for both Japan and the United States, were collected at the same time and in very similar settings, and include the measure of Grasmick, Tittle, Bursik, and Arneklev (1993) designed to tap each of the six components of low self-control identified by Gottfredson and Hirschi (1990). Therefore, building on Vazsonyi, Pickering, et al. (2001), and Vazsonyi, Wittekind, et al. (2004) important research, we can assess both the dimensionality of low self-control and the generalizability of the theory in Japan and the United States.

## **An Overview of Self-Control Theory**

Self-control theory (Gottfredson & Hirschi, 1990; Hirschi, 2004) is the latest major development in the control theory paradigm in criminology and the first significant revision of that perspective since Hirschi’s social control theory in 1969. Social control theory was presented as a revival of classical criminology, focusing on the question “Why do people not commit crime?” assuming that humans are by nature inclined to commit acts of force and fraud in pursuit of their self interests. The capacity to commit crime appears to be universal. What varies is the constraints that individuals experience that effectively keep them from committing crime. In social control theory, those constraints are one’s attachment to conventional society (Hirschi, 1969).

Self-control theory poses the same fundamental question but focuses on the development of a stable individual difference, self-control, which largely takes place during the first decade of

a child's life. Gottfredson and Hirschi (1990) suggest that adequate self-control must develop through socialization processes; if these are not present, individuals in effect maintain low self-control. Individuals with low self-control are (a) impulsive—an orientation toward the present with little concern for the future, (b) have the desire to take risks, (c) have a preference for physical activity rather than mental activity, (d) have a preference for simple tasks rather than complex ones, (e) are selfish and lack concerns for the well-being of others, and (f) have a bad temper. Low self-control is linked to both crime and analogous behaviors, with individuals. Additionally, opportunity is an important component of the theory. Individuals with low self-control, in the presence of opportunities to commit acts of force and fraud in pursuit of their self-interests, are more likely to commit such acts (see also Hirschi & Gottfredson, 1994).

### *Dimensionality of Low Self-Control*

Our interpretation of dimensionality of low self-control is based on the frequently cited statement by Gottfredson and Hirschi (1990):

there is a considerable tendency for these traits to come together in the same people, and since the traits tend to persist throughout life, it seems reasonable to consider them comprising a stable construct useful in the explanation of crime and analogous behaviors (pp. 90–91).

We propose each of the six traits identified by theory is a concurrent indicator of the low self-control construct. In other words, self-control is multidimensional, and individuals have more or less of it, depending on their early childhood socialization experiences. People with low self-control, in the presence of opportunities to commit acts of force and fraud in pursuit of their self-interests, will then commit such acts.

To date, many studies (e.g., Arneklev, Grasmick, & Bursik, 1999; Longshore, Turner, & Stein, 1996; Romero, Gomez-Fraguela, Luengo, & Sobral, 2003; Vazsonyi, Pickering, et al., 2001; Vazsonyi, Wittekind, et al., 2004) have provided evidence supporting multidimensionality of the low self-control construct. Perhaps, the first study to examine the dimensionality is the research by Longshore et al. (1996) on the construct validity of the research by Grasmick et al. (1993). Using the EQS structural equations, they found that a five-factor, 22-item model of low self-control provided the best fit for their sample of illicit drug users as a whole (comparative fit index [CFI]<sup>1</sup> = .91) and for subsamples of Whites (CFI = .93) and African Americans (CFI = .92), juveniles (CFI = .89) and adults (CFI = .91), and men (CFI = .92). In short, these findings provide general support for the statement that “our factor analyses for the most part replicated conceptual distinctions initially proposed by Gottfredson and Hirschi (1990) and translated into empirical indicators by Grasmick et al. (1993)” (Longshore et al., 1996, p. 222).

More recently, Vazsonyi, Wittekind, et al. (2004) made a similar assessment of the measure's factor structure by Grasmick et al. (1993) in Japanese and American samples. Vazsonyi, Pickering, et al. (2001) collected data from adolescents in four Western nations, and more recently, have added data from college students in the United States and Japan (Vazsonyi, Wittekind, et al., 2004). The evidence in the second-order confirmatory factor analysis (CFA) was that a six-factor, 22-item model of low self-control provided the best fit for both the Japanese sample (CFI = .97) and the U.S. sample (CFI = .99). Then, Vazsonyi, Wittekind, et al. (2004) concluded that “the low self-control construct was best represented as a multidimensional construct, one which includes a number of distinct elements as theoretically proposed by the General Theory (Gottfredson & Hirschi, 1990)” (p. 208).

Similar results are reported by Kono and Okamoto (2001) who analyzed male offenders in Japan. They initially subjected the measure of Grasmick et al. (1993) to a principal factor analysis with

oblique rotation and found that the forced six-factor solution indicated eight substantive factors, mostly but not totally consistent with the six components specified by Grasmick et al. (1993). However, their attempts to improve the six-factor model by deleting specific items eventually led to the elimination of three items (“I often act on the spur of the moment without stopping to think,” “I’m more concerned with what happens to me in the short run than in the long run,” and “The things in life that are easiest to do bring me the most pleasure”), leaving the six distinct factors specified in the theory with eigenvalues greater than 1.0.

Despite the accumulation of evidence that argues for multidimensionality of low self-control, the controversy still continues whether the construct, both at conceptual and empirical levels, is unidimensional or multidimensional. For example, laudable efforts at developing what is now referred to as the Grasmick’s Low Self-Control Scale led Grasmick et al. (1993) to conclude that “the strongest case can be made for a one-factor unidimensional model” (p. 17), although their results also suggest that the construct can actually subsume five distinct dimensions. In their analysis of the same data as those used by Longshore et al. (1996), Piquero and Rosay (1998) similarly concluded that “we have provided evidence that suggests that the self-control scale developed by Grasmick and his colleagues is a unidimensional construct that appears to come together in the same people” (p. 169). This conclusion is in marked contrast to that made by Longshore et al. (1996) who analyzed the same data to uncover evidence of a multidimensional construct of low self-control. However, this is not surprising because, as Arneklev et al. (1999) point out, scholars have adopted “the conflicting interpretations of Gottfredson and Hirschi’s conceptualization of low self-control (and, by extension, which techniques should be used to test its dimensionality)” (p. 310).

As noted earlier, Gottfredson and Hirschi (1990) do identify the distinctive six traits of low self-control and state that “there is a considerable tendency for these traits to come together in the same people” (pp. 90, 91). This is a crucial statement in their theory. Based on this statement and previous research, we then expect that low self-control is a multidimensional characteristic, where the six traits (or dimensions) specified in the theory account for another common factor. There is also the expectation from the theory (see Gottfredson & Hirschi, 1990, p. 87) and previous research on invariance in the structure of the construct (e.g., Arneklev et al., 1999; Vazsonyi, Pickering, et al., 2001, 2004) that the multidimensional characteristic of low self-control does not change in form in cross-cultural context.

### *Generalizability of General Theory*

In American criminology, research on self-control and deviance consistently reveals that individuals with lower self-control are more likely to participate in a variety of deviant behaviors (see Piquero & Bouffard, 2007, for a review). According to Pratt and Cullen (2000), “this effect size would rank self-control as one of the strongest known correlates of crime. This effect size remained even when studies included controls for other theories and for opportunity” (pp. 951–952). The same causal relationship is reported in nations other than the United States. Data collected both in the West (e.g., Marcus, 2003; Nakhaie, Silverman, & LaGrange, 2000; Romero et al., 2003) and in Asia (e.g., Hwang & Akers, 2003; Vazsonyi, Wittekind, et al., 2004) confirm the significant effects of low self-control on criminal and deviant behaviors. Most recently, Vazsonyi, Wittekind, et al. (2004) have merged surveys conducted in Japan and the United States to test the prediction derived from the theory that the effects of self-control on various deviance measures are invariant across cultures. The culturally invariant prediction was observed for most of the criminal and deviant behaviors with an exception for alcohol use. Vazsonyi et al. did, in fact, report that self-control is not only a significant predictor of a person’s commission of deviant behavior in their Japanese and American samples but the difference in the effects is not significant across the two cultural groups. These findings are important because, by focusing on as diverse cultures as Japan and the United States,

Vazsonyi et al. have demonstrated the conceptual advance and addition to the extant literature on cross-national comparative tests of self-control theory.

Ours is a replication of Vazsonyi, Pickering, et al. (2001) and Vazsonyi, Wittekind, et al. (2004) to test the relationship between self-control and deviance using identical survey instruments in as diverse cultures as Japan and the United States, and it is the first research to direct attention to how cultural nuances might affect differences in the causal relationship.

### *The Effects of Low Self-Control: Does Culture Matter?*

Gottfredson and Hirschi (1990) posit that self-control is the major cause of deviance. However, we argue that this characteristic, internal to the individual, might not be as strong a predictor of deviance in a culture less individualistic than the United States (or among individuals who score lower on measures of individualism). In highly individualistic cultures, such as the United States, there is a faith in the inherent separateness of distinct persons, and people are encouraged to pursue and maintain a higher sense of independence from others by attending to and expressing their unique internal attributes (Hofstede, 2001). Consequently, the self in individualistic cultures is defined more in terms of attributes that are internal to it such as his or her own desires, personality traits, and abilities (Markus & Kitayama, 1991), and therefore people from such cultures are socialized to organize and make their behavior meaningful by reference to these personal attributes of the independent self (Kitayama & Uchida, 2005).

In less individualistic cultures like Japan, however, people are less differentiated from others and more interconnected through a web of social obligations. So, although they possess a set of internal attributes, they are more restricted in their expression of such attributes. Markus and Kitayama (1991) go so far to write that in Japan, "Agentic exercise of control is directed primarily to the inside and to those inner attributes, such as personal goals and traits that can disturb the harmonious equilibrium of interpersonal transaction" (p. 228; see also Morling, Kitayama, & Miyamoto, 2002). As a result, less individualistic cultures, in which internal attributes are understood more as situation-specific, and thus more elusive, do not allow internal attributes to play such a powerful role in regulating overt behavior.

Many scholars (e.g., Benedict, 1946; Doi, 1971; Nakane, 1970) in their observations about Japan and the United States, have noted the weaker individualistic orientation of Japanese culture. In his seminal work of IBM employees around the world, Hofstede (2001) found the United States and Japan to score 91 (ranked the 1st of 53 countries and regions) and 46 (ranked the 22nd), respectively, on his individualism index (43 is the average score). Thus, Japanese, more so than Americans, tend to have a lower penchant for independence as a cultural value. The findings reported by Hofstede have been replicated by others. Gudykunst et al. (1996) used questionnaire items from refinements of Schwartz's (1990, 1992) value orientation and the self-construal scales of Markus and Kitayama (1991) and found that Japanese college students, compared to Americans, have less individualistic values (e.g., pleasure and independence) and independent self-concept (e.g., "If there is a conflict between my values and values of groups of which I am a member, I follow my values").

Several scholars have also noted that Japanese, relative to Americans, are less concerned about congruency between internal traits and public behavior. In her cross-cultural study on truthfulness, Lebra-Sugiyama (1976) describes that activities regarding the outer self (i.e., *tatemaie*) in Japan are less likely to reflect an individual's true feelings (i.e., *honne*) and therefore are more likely to include distortion, deception, or falsity. This is especially so, according to Gudykunst and Nishida (1994), when the true feelings displayed in public are conducive to maintaining group harmony. Masuda and Kitayama (2004) also observe that after observing a behavior by another person, Japanese college students are less inclined than their American counterparts to make fundamental attribution error (Ross, 1977) or to infer that the behavior was produced by some internal disposition.

This literature on individualism refers mainly to how much congruency is apparent between internal traits and public behavior cross-culturally and, thus, does not directly tell us about the effects of self-control on deviant behavior. However, as noted, the theory locates the cause of crime in a factor internal to the individual (i.e., low self-control; see Tittle & Paternoster, 2000, for their classification of theories), and it may be, therefore, that less congruency between personality traits and overt behavior in less individualistic Japanese culture and among Japanese with less independent self-concepts has implications for the effects of self-control on deviant behavior. It is possible that in both cultures, as Gottfredson and Hirschi (1990) contend, low self-control leads to deviance. However, the link between the two could be less pronounced among Japanese for whom self-control is part of the “internal attributes” and less likely to be associated with overt behavior (see Shimizu, 2001). If so, we would then expect that individual’s self-control emphasized in the theory of Gottfredson and Hirschi might be less, not more, salient as determinants of behavior among Japanese in our data set than among Americans.

## Hypotheses

The arguments above lead to the following main hypotheses, in part replication attempts of previous work by Vazsonyi, Wittekind, et al. (2004), but in part departures characterized by a “cultural” focus on the self-control-deviance link.

*Hypothesis 1:* Low self-control is a multidimensional characteristic, which consists of the six traits among both Japanese and among American college students.

*Hypothesis 2:* Individuals with lower levels of self-control are more likely to participate in deviant behaviors.

*Hypothesis 3:* The strength of relationship between self-control and deviance is stronger among Americans than among Japanese.

## Method

### Sample and Data Collection

Data for this research come from a larger cross-cultural study of deviant behavior in Japan and the United States. In April of 2003, identical questionnaires, but in two different languages, were administered to samples of students in two public universities—one in the United States and one in Japan.<sup>2</sup> The U.S. university has a total enrollment (graduate and undergraduate) of approximately 24,000 and is within the boundaries of a metropolitan area of about 1.1 million inhabitants, which also contains the state’s capital. The Japanese university has an enrollment of approximately 16,500 students and is located within a metropolitan area of about 2.2 million inhabitants, which contains the prefecture’s capital city. Thus, both the American and the Japanese universities are in large (but not the largest) metropolitan areas that include the state/prefecture capital.

The data collection instrument, a self-report survey questionnaire, was initially designed in English. The questionnaire was then translated into Japanese using “back translation” (e.g., Matsumoto & Juang, 2004). The survey was administered to both the American and Japanese university students in the same month of the year (April).<sup>3</sup> In the United States, respondents were enrolled in an Introduction to Sociology course that is taken primarily by freshman and sophomores, few of whom have yet declared a major and most of whom will not become sociology majors. In Japan, respondents were registered in the sophomore level courses in a variety of majors including literature, economics, science, engineering, and education. Japanese students must declare a major before their admission to a university. In essence, there is no equivalent to an Introduction to Sociology (or any other subject) course taken by a large number of students outside their major.



**Table 1.** Item-level Information of Deviance Measure

Items	Japan (N = 433)		United States (N = 369)	
	M	SD	M	SD
Destroy property	1.52	0.70	1.34	0.59
Steal \$5 or less	1.12	0.41	1.34	0.58
Steal more than \$5	1.05	0.25	1.16	0.45
Hurt someone physically	1.13	0.42	1.11	0.37
Use tobacco/cigarettes	1.49	1.07	2.07	1.31
Cheat in school	1.70	1.02	1.65	0.81
Have illicit sex	1.20	0.61	1.58	0.89
Gamble illegally	1.29	0.79	1.35	0.74
Drive without seatbelt	1.26	0.66	2.21	1.15
Exceed speed limit by 15 mph	1.96	1.35	2.71	1.08
Drive under influence of alcohol	1.21	0.60	1.78	0.93

Note: Response options: 1 = *never*; 2 = *rarely*; 3 = *sometimes*; 4 = *often*; 5 = *almost always*.

A total of 442 Japanese and 505 English questionnaires were completed by the students in the Japanese and the U.S. universities, respectively.<sup>4</sup> The questionnaire cover letter clearly stated that participation was voluntary and that all responses were anonymous. In the analysis reported below, nine non-Japanese respondents in the Japanese sample and 136 non-White respondents in the U.S. sample were eliminated, resulting in 433 Japanese respondents and 369 White Americans.<sup>5</sup> In the Japanese sample, 71.1% were male, identical to the figure for the university as a whole. Among the 369 White American students in the analysis, 43.1% were male, somewhat less than the 51% of all students in the university.<sup>6</sup> Other potential differences between the two samples were considered that might need to serve as control variables. The mean age of the two samples did differ slightly, but significantly, as did the percentage who had lived in single-adult households. So, as described in more detail below, age and family structure were included as control variables.

### Variables and Measures

Our measure of self-reported *deviant behavior* includes 11 items that measure illegal or deviant behaviors in both the United States and Japan (see Table 1). Respondents were asked, "How often have you engaged in the following behaviors in the past year?" Possible responses ranged from *never* (coded 1) to *almost always* (coded 5); responses were averaged to compute a deviance score used in subsequent analyses (score range: 1–5).

In this research, the Low Self-Control Scale of Grasmick et al. (1993) was used. While Hirschi (2004) and others (DeLisi, 2001; Marcus, 2003, 2004) have argued that one would be better served using a behavioral measure than an attitudinal one, we feel that the use of attitudinal measures is superior because it is not a behavioral but an attitudinal measure, which is more compatible with the theoretical proposition that the cause of deviance is a factor "internal" to the individual. It is also important to note that a recent replication of the Retrospective Behavioral Self-Control scale (RBS) developed by Marcus indicates that the majority of the items are value laden about deviance or crime, and thus not appropriate measures of self-control (Ward, Gibson, Boman, & Leite, 2010). In a related effort, based on extensive psychometric work in a structural equation modeling (SEM) framework with two college student samples totaling approximately 700, Vazsonyi, Huang, and Trejos (2005) concluded that the RBS measure was an example of an empirical tautology as it was effectively indistinguishable from deviance (90% shared variance). The final revised RBS measure by Ward and his

colleagues included 18 of 67 “valid” behavioral indicators of self-control and explained additional variance in deviance, above and beyond effects by the scale developed by Grasmick et al. Nevertheless, as Pratt and Cullen (2000) note, it is the most commonly used measure designed to tap each of the six components of low self-control identified by Gottfredson and Hirschi (1990). Thus, the 24 items—4 for each of the 6 components—were presented to respondents with response options ranging from *strongly disagree* (coded 1) to *strongly agree* (coded 4). Again, responses were averaged to compute a deviance score used in subsequent analyses (score range: 1–4).

*Control variables* include sex, age, and family structure. Sex was coded 0 for *females* and 1 for *males* with a mean of .43 ( $SD = .50$ ) for the U.S. sample and a mean of .71 ( $SD = .45$ ) for the Japanese sample. Both samples have restricted age distributions because of the populations from which they were drawn. The mean age of the U.S. sample was 19.62 ( $SD = 1.55$ ), with 91.8% between 18 and 21 years of age. The mean age for the Japanese sample was 19.37 ( $SD = .64$ ), with 99.1% between the ages of 18 and 21. The two means are significantly different ( $p < .001$ ). The larger standard deviation for the American sample occurs because of six respondents who were older than traditional college students, with a maximum age of 34 years. The oldest respondent in the Japanese sample was 23. When the two samples were separated, the skewness of the distribution of age was .64 for the Japanese sample and 1.55 for the American sample. To reduce the latter skewness, age was truncated by converting the ages of the six older U.S. students to 23, which reduced the skewness to 1.03 with a mean of 19.55 ( $SD = 1.21$ ) in the U.S. sample.

Based on the literature concerning the effect on deviance of being raised in a single-parent family in the United States (e.g., Rankin & Kern, 1994; Rebellon, 2002), and evidence that such families are less common in Japan, we included a measure of family structure as a control variable. In Japan, 7.6% of households with children have a single parent (Statistics Bureau, 2000), compared to 26.7% in the United States (U.S. Census, 2001). Developing a measure of family structure applicable to both cultures was also confounded by the greater prevalence in Japan of certain types of families—especially three-generation and extended families (Sugimoto, 2003)—that are rarer in the United States. As a compromise based on these cultural differences, we then classified respondents into two categories—those who were raised by one adult at any time in their lives and those who were always raised by two or more adults. The exact question was phrased as follows: “While growing up, how would you describe your household?” This dichotomous variable was dubbed “*two adult home*” (coded 1 for *always with two or more adults*) and had a mean of .85 ( $SD = .36$ ) for the U.S. sample and .95 ( $SD = .21$ ) for the Japanese sample.

## Plan of Analysis

In the first step, descriptive statistics were computed for low self-control and deviance measures by country. We then examined whether the six dimensions of low self-control form a latent construct among Japanese and among Americans. Vazsonyi, Wittekind, et al. (2004) tested the self-control concept proposed by Gottfredson and Hirschi (1990) using the self-control items developed by Grasmick et al. (1993); in fact, they found support for the multidimensionality of self-control. We replicated these analyses. A stringent second-order CFA was used to test the low self-control construct and its dimensionality using AMOS (Arbuckle & Wothke, 1999) in both samples; this also included subsequent multigroup analyses to test for potential similarities or differences across countries. Two models were tested in the multigroup CFA analyses. In Model 1, all paths were free to vary (default model). In Model 2, five of the six paths were constrained to equality; the remaining path (impulsiveness) was fixed to 1 as required by CFA to identify the scale of the latent factor (Kline, 2005).

Using SEM, we then assessed whether low self-control has a significant effect on deviance in each group. The second-order CFA model of low self-control was used to predict deviance. Item



**Table 2.** Descriptive Scale Information and Mean Level Comparisons of Low Self-Control and Deviance by Country

Scales	# of items	Japan (N = 433)			United States (N = 369)			p
		$\alpha$	M	SD	$\alpha$	M	SD	
Impulsiveness	4	.67	2.50	.52	.71	2.04	.55	.000
Simple Task	4	.71	2.44	.53	.76	2.07	.53	.000
Risk Seeking	4	.80	2.19	.63	.82	2.45	.61	.000
Physical Activity	4	.80	2.57	.63	.78	2.64	.62	.077
Self Centeredness	4	.58	2.10	.46	.59	1.80	.56	.000
Temper	4	.68	2.13	.56	.80	2.06	.67	.121
Low Self-Control	24	.80	2.32	.31	.85	2.18	.37	.000
Deviance	11	.72	0.36	.40	.78	0.66	.48	.000

**Table 3.** Correlations Between Low Self-Control and Deviance (by Country)

US Japan	1	2	3	4	5	6	7	8
1. Impulsivity		.42***	.49***	.27***	.32***	.39***	.76***	.41***
2. Simple task	.42***		.15**	.11*	.23***	.26***	.55***	.14**
3. Risk seeking	.30***	-.11*		.31***	.25***	.29***	.67***	.41***
4. Physical activity	.14**	-.11*	.40***		.06	.09	.50***	.21***
5. Self-centeredness	.32***	.25***	.18***	-.01		.41***	.60***	.26***
6. Temper	.30***	.28***	.12**	.01	.39***		.67***	.39***
7. Low self-control	.71***	.47***	.59***	.48***	.58***	.60***		.50***
8. Deviance	.19**	-.01	.28***	.25***	.12**	.08	.28**	

\*  $p < .05$ .\*\*  $p < .01$ .\*\*\*  $p < .001$ .

parcels were used to build the latent constructs part of the deviance measures. To ensure balanced assignment of items to the parcels, findings from exploratory factor analyses of scale items were used to assign the highest loading item to Parcel 1, the next highest to Parcel 2, and so forth (Little, Cunningham, Shahar, & Widaman, 2002). Item parcel scores were computed by averaging the items part of each parcel. In a final step, multigroup analyses were used to examine whether low self-control has similar or different effects on deviance for samples from two different countries. One default model with free paths and one comparative model with a fixed path (the path from low self-control to deviance was fixed to equality) were compared.

In both CFA and SEM models, study constructs were residualized by age and sex to remove potential confounds. Model fit was assessed by the standard  $\chi^2/df$  ratio (Green, 1992), the CFI (Bentler & Dudgeon, 1996), and the root mean square error of approximation (RMSEA; Browne & Cudeck, 1993; Loehlin, 1992). In multigroup analyses, model fit was evaluated by difference statistics of the same standard evaluative indices.

## Results

### Descriptive Analysis

Table 1 shows the descriptive statistics by country for each of the 11 items that measure deviance. Table 2 includes the means and standard deviations for measures of low self-control and deviance by

**Table 4.** Second-Order CFA Model Fit: Low Self-Control

	N	$\chi^2$	df	$\chi^2/df$	CFI	RMSEA
Total sample	802	751.88	228	3.30	.91	.05
Japan	433	472.98	228	2.07	.92	.05
United States	369	413.10	228	1.81	.94	.05

Note: CFI = comparative fit index RMSEA = root mean square error of approximation.  
All  $\chi^2$  are significant  $p < .001$ .

**Table 5.** Second-Order CFA Standardized Parameter Estimates

	Total Sample	Japan	United States
Impulsiveness → low self-control	.91	.84	.92
Simple tasks → low self-control	.72	.71	.65
Risk seeking → low self-control	.35	.45	.51
Physical activity → low self-control	.18	.15	.28
Self centeredness → low self-control	.54	.57	.46
Temper → low self-control	.51	.53	.51

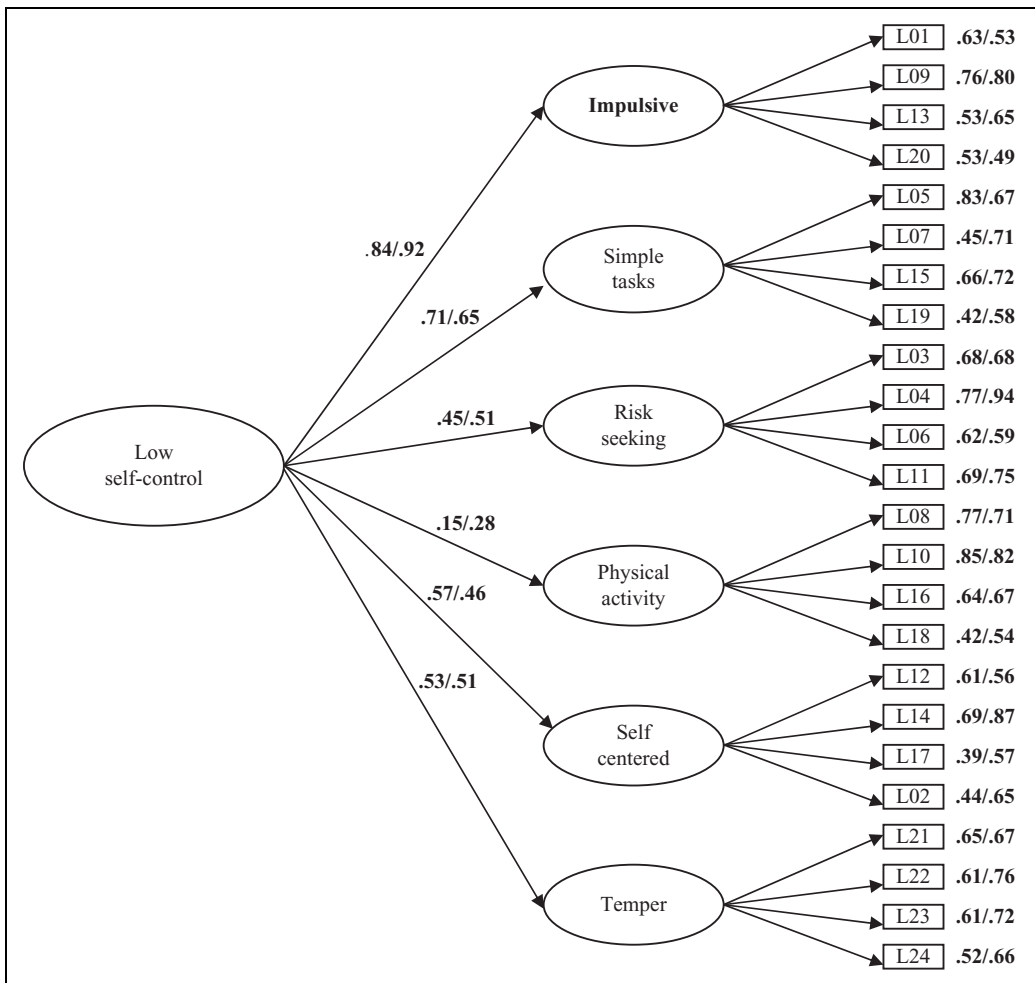
All parameter estimates are significant at  $p < .001$ .

country as well as the results of a simple mean level comparison by country. Findings show that the Japanese college students reported higher levels of impulsiveness, simple task, self-centeredness, and overall low self-control; however, the U.S. college students reported higher mean levels in risk seeking and deviance. Table 3 also reports the bivariate relationships (one-tailed significance tests) among measures of low self-control, including subscales and deviance. Associations provided evidence of significant positive associations between low self-control, subscales of low self-control, and deviance. The correlations between measures of low self-control and deviance were in the expected direction as they indicate that individuals with low self-control are more likely to commit deviant behaviors.

### Second-Order CFAs

Second-order CFAs for the low self-control construct were completed for the Japanese and U.S. samples. Six structural paths identifying the second-order self-control construct were tested. Table 4 presents the findings from the CFAs by country. Findings provided evidence of very good model fit in both samples (Japanese sample:  $\chi^2[228] = 472.98, p < .001$ ;  $\chi^2/df = 2.07$ ; CFI = .92; RMSEA = .05; U.S. sample:  $\chi^2[228] = 413.10, p < .001$ ;  $\chi^2/df = 1.81$ ; CFI = .94, RMSEA = .05).<sup>7</sup> Table 5 and Figure 1 include parameter estimates from this model test by study sample. Standardized parameter estimates which all reached statistical significance ( $p < .001$ ) were consistent across samples, ranging from .15 (physical activity) to .84 (impulsiveness) for the Japanese sample and .28 (physical activity) to .92 (impulsiveness) for the U.S. sample.

To test for potential similarities or differences in the factor structure of low self-control between the Japanese and U.S. samples, multigroup second-order CFAs were completed. AMOS compares nested models, one default model where paths are free to vary and one comparative model with fixed paths (one fixed to 1 as required by AMOS and 5 fixed to equality). Fit of both models was compared by computing difference statistics (i.e.,  $\Delta\chi^2$ ,  $\Delta CFI$ , and  $\Delta RMSEA$ ) to assess whether the two models differed significantly. A lack of difference between the two models would indicate great similarity in the structural paths. The comparison between Models 1 (default) and 2 (constrained) indicated that

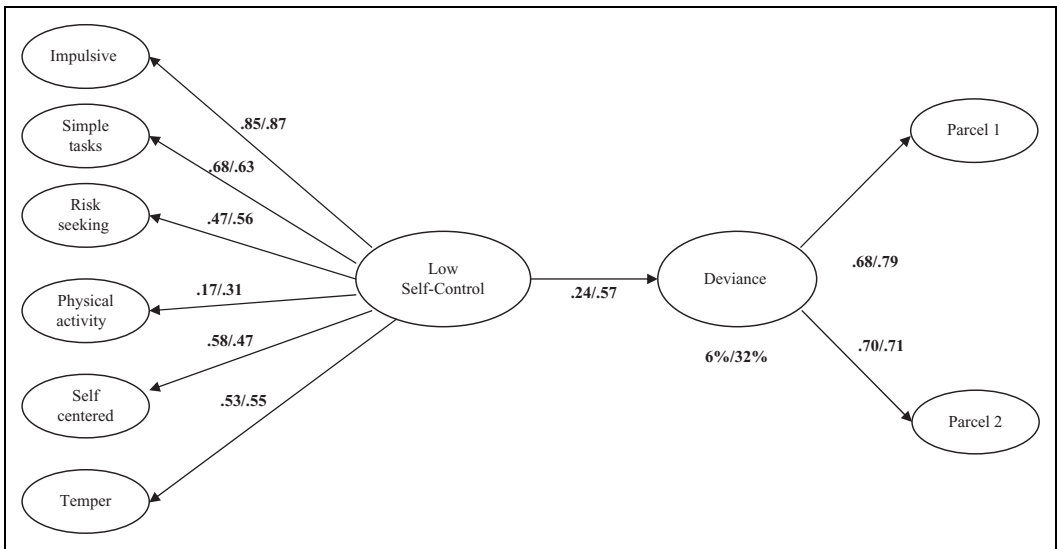


**Figure 1.** Second-order CFA: standardized coefficients (by country). Note: Japanese/U.S. youth. All parameters are significant at the  $p < .001$  level. Based on modification index, the correlations were specified between the errors of item L01 and L09, L01 and L18, L20 and L19, L20 and L17, L07 and L03, L07 and L19, L03 and L18, L04 and L11, L04 and L10, L04 and L02, L11 and L18, L16 and L28, L18 and L14, L12 and L23. The correlations were also specified between the errors of the latent variable simple tasks and risk seeking, risk seeking and physical activity, as well as between self-centeredness and temper.

there was no statistically significant difference between the two models ( $\Delta\chi^2[5] = 6.13, p = .29$ ;  $\Delta CFI = .001$ ;  $\Delta RMSEA = .000$ ). These findings provided evidence of similarity in the low self-control construct in both Japanese and U.S. samples.

## SEM

In the next step, an SEM model was tested to examine whether low self-control predicted deviance in a similar or different manner for the two samples, using the second-order low self-control model tested in the CFAs (see Figure 2). Model fit information is included in Table 6. Findings indicated good model fit for both samples (Japanese sample:  $\chi^2[274] = 590.12$ ,



**Figure 2.** SEM model: standardized coefficients by country. Note: Japanese/U.S. youth; all parameters are significant at the  $p < .001$  level. SEM = structural equation modeling.

$p < .001$ ;  $\chi^2/df = 2.15$ ; CFI = .90; RMSEA = .05; U.S. sample:  $\chi^2[274] = 504.24$ ,  $p < .001$ ;  $\chi^2/df = 1.84$ ; CFI = .93, RMSEA = .05). Figure 2 includes standardized parameter estimates from this model test by study sample. Findings provided evidence of a positive relationship between low self-control and deviance for both samples (Japanese sample:  $\beta = .24$ ,  $p < .001$ ; U.S. sample:  $\beta = .57$ ,  $p < .001$ ), although the magnitude of the low self-control effect appeared to be much for U.S. sample.<sup>8</sup> Low self-control explained 6% variance in the deviance for Japanese sample and 32% variance in the U.S. sample.

Finally, a multigroup analysis was completed to test whether low self-control has a similar or different effect on deviance for the two samples. A default model where paths were free to vary and a comparison model with the fixed paths (i.e., the path from low self-control to deviance has been fixed to be equal) were compared. The following difference statistics were found:  $\Delta\chi^2(1) = 6.79$ ,  $p = .01$ ;  $\Delta CFI = .001$ ;  $\Delta RMSEA = .000$ . Although the  $\Delta\chi^2$  statistic provided evidence of a significant difference between the two models, alternative fit indices provided no such evidence.<sup>9</sup>

**Discussion and Conclusions**

With a few notable exceptions (Vazsonyi & Belliston, 2007; Vazsonyi, Pickering, et al., 2001; Vazsonyi, Wittekind, et al., 2004), cross-cultural research on the self-control theory of Gottfredson and Hirschi (1990) has been limited largely to examining findings that have used samples in single countries other than the United States. One reason for this limitation, according to Gottfredson and Hirschi, is because theirs is a general theory that is not confined to our particular culture and scholars have assumed that there are no differences in how self-control predicts deviance across cultural and national groups. The other reason, which perhaps is more practical and veritable, is because scholars have confronted difficulties in developing measures of theoretical variables in different languages and collecting identical data at the same time in a similar setting across cultures (see also Dussich, Friday, Okada, Yamagami, & Knutden, 2001; Hwang & Akers, 2006).

In this article, we have freed cross-cultural tests of self-control theory from its bind to “referring to how the findings from one society do or do not now conform to those found in previous research in

**Table 6.** SEM Model Fit

	<i>N</i>	$\chi^2$	<i>df</i>	$\chi^2/df$	CFI	RMSEA
Total sample	802	1046.48	274	3.82	.88	.06
Japan	433	590.12	274	2.15	.90	.05
United States	369	504.24	274	1.84	.93	.05

Note: CFI = comparative fit index; RMSEA = root mean square error of approximation; SEM = structural equation modeling. All  $\chi^2$  are significant at the  $p < .001$ .

the United States or other societies” (Hwang & Akers, 2006, p. 63), thus presenting the real sense of cross-cultural evidence of the applicability of the theory. To answer the question of whether the theory is really as “general” as its authors would hope, data analysis needs to directly compare findings from cross-cultural samples. In part, this led Vazsonyi, Wittekind, et al. (2004) to collect data from college students in cultures as diverse as Japan and the United States and examine the dimensionality of the low self-control construct and the causal relationship between low self-control and deviant behavior across cultures. Informed largely by the theory, however, they did not develop a rationale for predicting that the effect of low self-control on deviant behavior might differ between the two cultural groups.

Our analysis of identical survey data from college students in both countries offered generally supportive, but somewhat mixed evidence for the predicted similarities and differences. First, our findings confirmed the expectation from the theory and research on multidimensionality of the low self-control construct. We found strong evidence in both the Japanese and the American samples that each of the six dimensions, as identified in the theory, loaded on a low self-control latent construct. This included evidence, consistent with what Vazsonyi, Wittekind, et al. (2004) found, that the construct was clearly multidimensional and supported best empirically by a higher or second-order latent construct. Second, we found, again consistent with the expectation that for the offenses used in the current study the effects of low self-control on a person’s commission of such offenses are positive and significant in both countries. With relevant controls for sex, age, and family structure, the standardized coefficients were positive and significant. But third, our evidence is less consistent concerning cultural differences in the effect of low self-control on deviant behavior because alternative fit indices provided no such evidence. Although the delta chi-square test indicated a significant difference, the test is notoriously sensitive to sample size. Given that our sample was relatively large and that ours is the second study to have found essentially no differences with different samples in the same two countries, we can thus conclude that there is no difference in the effect of low self-control on deviant behavior across these two societies, consistent with theoretical predictions and with previous work on college samples by Vazsonyi and his colleagues.

As summarized above, the current research offers additional evidence of the cross-cultural applicability of the self-control theory of Gottfredson and Hirschi (1990). However, our findings have also exposed potential weaknesses of the theory. First, we have offered at least tentative evidence that the theory might not be so capable of explaining criminal and deviant behavior among Japanese. For our general measure of deviant behavior, the regression coefficient of .24 for low self-control in Japan was smaller in magnitude than that of .57 in the United States, although the difference between the two was not significant based on a statistical test. Furthermore, the variance of deviant behavior, which is explained by low self-control was only 6% in Japan while the comparable figure in the United States was 32%. Accounting for this difference in magnitude (although not statistically significant) seems an important next task in scholarship in this area.

One explanation, as we have argued, is that cultural differences in individualism and congruency between internal attributes and overt behavior contribute to cultural differences in the relationship

between low self-control and deviant behavior. We have relied on earlier literature on a cultural variability in individualism to characterize Japanese as those who are socialized more to suppress expression of personal attributes. This characterization in turn is expected to lead to less congruency between his or her level of self-control and deviant behavior. However, no measures are included, which would allow us to examine whether this was true for the respondents in our study. Lacking direct measures of tendency toward individualism and toward congruency between internal attributes and overt behavior, we can only *suggest* that the differences between the two groups might be a result of cultural differences in this socialization regarding congruency between internal attributes and overt behavior. Therefore, a more nuanced test of cross-cultural generalizability of self-control theory, as it applies to these two cultures, would involve examining whether the cultural differences in the effects of low self-control are related to cultural differences in congruency between internal attributes and overt behaviors, which stem from cultural differences in inclination for individuality and independence.

An alternative explanation is restriction in range of deviance found in Japanese society vis-à-vis U.S. society, something that Vazsonyi, Wittekind, et al. (2004) also alluded to in their effort that found similar evidence. The 11 forms of deviance included in the current study have been used repeatedly in the United States to illustrate the kinds of behaviors that the theory aims at explaining. However, these forms of deviance may simply not reflect the types of deviance prevalent in Japan. If so, that explains why low self-control has somewhat less of an effect on deviance among Japanese than among Americans. To determine the answer to this, additional kinds of deviant behavior need to be included that are culturally sensitive such as “*deito D.V.* (physical and mental violence of lovers, mainly from boyfriends to girlfriends) and “*netto ijime*” (bullying on the Internet). Perhaps, a more refined measure of deviance such as this, taking into account the forms of culturally sensitive deviance, might then produce results more consistent with the theoretically expected *similar* effect of low self-control on deviant behavior. It is also simply possible that Japanese college students, as a group, simply engage in less deviance, independent of measurement sophistication or focus, thus resulting in restricted range of variables, and therefore, low explanatory power.

Second, the evidence we have presented that is perhaps more challenging to the theory concerns the relative importance of the six dimensions to form the latent global low self-control construct. Although the findings are generally supportive of the first hypothesis, the details of our analyses suggest that impulsiveness and physical activity loaded more and less strongly, respectively, on low self-control relative to the other dimensions. The standardized parameter estimates for Impulsiveness were .84 in Japan .92 in the United States, whereas those for Physical Activity were .15 in Japan and .28 in the United States. These findings could be problematic because the theory touches on neither “centrality” nor “periphery” of certain dimensions to the low self-control construct. However, it is apparent, at least with the Japanese and American college students in the current sample, that impulsiveness is by far the most important central dimension of low self-control, relative to other components whereas physical activity is a rather negligible dimension.

However, ours is not the only study to have found such disparities in factor loadings. Arneklev et al. (1999), using second-order factor analysis of the 24 low self-control items of Grasmick et al. (1993), found that impulsiveness loaded more strongly on low self-control than the other dimensions both among adults (.63) and college students (.58), whereas physical activity loaded the weakest among adults (.25) and college students (.29). However, in our study, the difference between the two dimensions’ factor loadings is much greater. Furthermore, the difference is evident across the two diverse cultures.

There is really nothing in the theory that would account for these findings. One possible answer may lie in the attitudinal scale we used in the current study. Clearly, these findings are a direct reflection of the instrument used to operationalize low self-control. Although this attitudinal scale is often considered the most valid and reliable measure of low self-control (Pratt & Cullen, 2000), it might



not be the case among the Japanese and American college students in the current sample. We would therefore encourage others to use alternative measures. Additional scales such as those developed by Tittle, Ward, and Grasmick (2003) may produce different results that are consistent with theory, although the theory only provides a conceptual road map and does not specify the strength of each of the proposed dimensions. Furthermore, Hirschi (2004) has recently called into question the early operationalization of self-control (see also Akers & Seller, 2009; DeLisi, 2001; Jones & Quisenberry, 2004; Marcus 2003, 2004). Hirschi (2004) has provided specific alternatives to potentially overcome its limitations, arguing that behavioral measures more closely tap into low self-control due to the generality of deviance. However, very little work to date has examined this empirically, with some exceptions, which provide mixed evidence about the behavioral measures that have been developed to date (Vazsonyi, Huang, et al., 2005; Ward et al., 2010). Finally, recently formulated competing theoretical work that both incorporates self-control as well as contextual characteristics, such as Situational Action Theory (Wikström, 2006), might provide additional insights.

In conclusion, we want to emphasize that ours is not the definitive study of the cross-cultural applicability of the self-control theory of Gottfredson and Hirschi (1990) across the two diverse cultures—Japan and the United States—nor is it comprehensive in the sense that it includes many competing theoretical ideas or constructs, although this was not our stated goal. Our research design certainly has limitations. First, our samples of college students, while in the age group more likely to be engaging in deviant behaviors (Hirschi, 1969), are not representative of the general population of these two societies. Second, our samples of college students, while we did our utmost to achieve their comparability in ways that are important for the analysis, are convenience samples and therefore, should not be considered representative of each of the university populations, nor of student populations in each country. Third, our analysis, because of the racial and ethnic homogeneity of Japanese society, was restricted to the dominant group in both counties (i.e., Japanese and Caucasians). Accordingly, the lack of variation on age, education, and ethnicity may have restricted our ability to generalize our findings. Fourth, as noted earlier, our data do not include direct measures of tendency toward individualism and toward congruency between internal attributes and overt behavior. Inclusion of such measures would strengthen the analyses of cultural differences in the effects of self-control on deviant behavior, although at the same time, they would not change the observed links that seem largely invariant across these two cultures. Finally, due to the exploratory nature of our study, the theoretical variables we included are not extensive, although we found that adding competing variables, such as peer deviance, did not materially affect the main study findings. Clearly, future research should include additional measures and other concepts specified by theory (i.e., effective parenting and crime opportunity). Tittle, Ward, and Grasmick (2004), for example, have proposed that the effect of self-control *ability* on deviance is conditioned by the level of self-control *desire*. Using a measure of “self-control desire” with admitted shortcomings, they have provided preliminary support for their claim that deviance is least prevalent among those with high self-control ability and high self-control desire, and most prevalent among those with low self-control ability and low self-control desire. Entering these additional variables from self-control theory may not only capture sources of variances unmeasured in this study but also allow us to locate what similarities or differences would contribute to the similarities in the effect of low self-control on deviant behavior between Japanese and Americans.

## Notes

1. The comparative fit index (CFI) is used as a measure of goodness of fit for the model. Once goodness of fit has been established, the coefficients in the model can be interpreted. In other words, if the model does not have good fit, path coefficients have little meaning. The general convention is to accept .90 as the cutoff for good fit.

2. College undergraduate students were chosen as respondents for three reasons. First, we had easier access to them than to younger adolescents. Second, college undergraduate students, especially early in their academic years, typically are in their deviance-prone years (Hirschi, 1969). We realize, of course, that people who do not attend college are excluded from our research design and might be more (or less) deviant than those who do attend college. However, the inclusion of only college students was a constant across the two samples. Third, Hirschi and Gottfredson (2000) claim that any type of sample including students can be used to empirically assess issues that pertain to self-control theory (see also Piquero & Bouffard, 2007).
3. The month of April was crucial to obtain students from both countries at approximately the same stages of their academic careers. While an academic year begins in late August or early September in universities in the United States, the Japanese academic year begins in April. Thus, we chose to gather data in April of 2003. We expected the vast majority of U.S. students in the Introduction to Sociology class then would be nearing the end of their freshman or sophomore year. In fact, 50% of the U.S. respondents were freshmen and another 30% were sophomores. In the Japanese university, we gathered data in courses at the onset of the sophomore year. Had we chosen freshman level courses in Japan, the students in the Japanese sample, unlike those in the U.S. sample, would have had hardly any experience as college students at the time the data were collected. Indeed, 93% of the respondents in the Japanese sample were beginning sophomores.
4. Our target, given resources available, was *usable* comparable samples of about 450 students in lower division courses in each of the two universities. With this target size in mind, we then selected classrooms. In the Japanese university, a total of 442 questionnaires were distributed to the students who agreed to participate in the survey, so the response rate was 100%. In the U.S. university, the questionnaires were distributed to all students in the classrooms. However, because we did not collect information about how many students were present in the rooms on the day of administration, we could not calculate a response rate in the United States.
5. Minority group status was another issue we had to confront. Race/ethnicity is included, at least as a control, in tests of deviance theories in the United States. We knew in advance, however, that this would be problematic in our research because of the racial and ethnic homogeneity of Japan. Had we included a variable for race/ethnicity that identified minority group status, that variable would have been collinear with the dummy variable for Japan. Consequently, our plan was to use only the questionnaires completed by those who were self-identified dominant group members.
6. The sex composition of universities in Japan and the United States means that the proportion of males in the Japanese sample will be higher. In the American university, 51% ( $N = 12,202$ ) of students were male, a figure typical of state universities in the United States. In contrast, Japanese national universities are overwhelmingly male. According to figures from the Ministry of Education, Culture, Sports, Science and Technology (Statistics on School Education, 2003), 66% of all students enrolled in all national universities are males. In the particular Japanese university from which we gathered data, 71% ( $N = 11,798$ ) of all students enrolled were males. Our two samples reflect these distributions.
7. When determining model fit, an acceptable fit for the comparative fit index (CFI) is between .90 and 1.0 (Crowley & Fan, 1997); for the root mean square error of approximation (RMSEA), model fit below .5 is considered excellent while between .5 and .8 it is considered moderate (Browne & Cudeck, 1993); for  $\chi^2$  to  $df$  ratios, model fit below 3 is considered excellent (Green, 1992).
8. To rule out potential confounds of the self-control–deviance link, and to be conservative, the SEM model was also tested by adding peer deviance to the model. Peer deviance was measured with seven items that ask adolescent how many of their close friends engaged in a variety of deviant behaviors in the past year ( $\alpha = .82$ ). The peer deviance construct was added to the structural equation modeling (SEM); findings indicated that the magnitude of the relationship between low self-control and deviance was not affected in the Japanese sample ( $\beta = .23, p < .001$ ), but slightly reduced in the U.S. sample ( $\beta = .39, p < .001$ ). Nevertheless, the effect by low self-control on deviance remained significant for both samples controlling for the effect by peer deviance; in addition, the magnitude of the low self-control effect still appeared to be larger for U.S. sample.

9. As the chi-square statistic is overly sensitive to sample size and the total number of parameters, model fit was evaluated using alternative fit indices, including comparative fit index (CFI), root mean square error of approximation (RMSEA), and  $\chi^2$  to *df* ratios.

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